



# Disorders Related to Excessive Pelvic Floor Muscle Tension

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By: Jeannette Tries, Ph.D., O.T.R., B.C.I.A.-P.M.D.B. Center for Continence and Pelvic Floor Disorders, Aurora Women's Pavilion, WI



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Disorders which have excessive pelvic floor muscle activity as their primary feature are often not recognized and diagnosed by physicians. However, millions of people suffer from such disorders and associated symptoms of disabling pain and disruptions in bowel and bladder control. Unfortunately, individuals with these disorders frequently seek help for many years before receiving any explanation for, or relief from their disturbing symptoms. The purpose of this article is to briefly explain the role of the pelvic floor muscles and some symptoms related to the presence of elevated tension in these muscles, and to describe various treatment options available.

The pelvic floor is composed of a group of muscles which span the inferior, or underlying surface of the bony pelvis. As a group, these muscles originate at the pubis, which is located anteriorly, at the frontal portion of the pelvis, just above the genitals. From the pubis, the pelvic floor muscles extend back to the coccyx, commonly referred to as the "tailbone." As a thick sheath, these muscles form the floor of the pelvis, hence the name, "pelvic floor" muscles. This muscular floor is pierced by the urethra (the structure which empties urine from the bladder), the anal canal and the vagina, and gives off fibers which connect it to these organ structures.

The pelvic floor muscles perform four major functions which include:

1. support of the organ systems within the pelvis and lower abdomen;
2. closure of the urethra and anal canal to maintain continence;
3. signaling to the bladder, rectum and colon when voiding or defecation is desired; and
4. opening of the urethra and anal canal by total relaxation to allow for complete and effortless defecation and urination.

If any of the above functions are disturbed, normal bowel and bladder control will be disrupted.

The pelvic floor muscles are normally under voluntary control, much like the muscles in the hand. That is, we are able to contract or relax them at will. This voluntary control feature is in contrast to the smooth muscle of the body which compose

the bladder, colon and rectum. The smooth muscle of these organs functions automatically without direct voluntary control. When we want to stop the flow of urine or prevent fecal loss, for example, we contract the pelvic floor muscles which lifts the pelvic floor about a half-inch and closes off the bladder and rectal opening.

There is another feature which is extremely important in understanding the interaction of the involuntary and voluntary muscles of the bowel and bladder systems. That is, the involuntary smooth muscle of the bladder, rectum, and colon is actually inhibited through the voluntary contraction of the pelvic floor muscles. This inhibition function is an essential factor in maintaining continence. Similarly, when we want to defecate or urinate, we voluntarily relax the pelvic floor muscles completely, permitting the entire pelvic floor to drop a bit to open the anal canal or urethra, so we can urinate or defecate without straining. The coordinated interaction between the smooth muscle and voluntary muscle is essential for normal bladder and bowel function. This muscle coordination is so well learned when we are young that we perform these functions without even thinking about it.

It is generally understood and accepted that weakness of the pelvic floor muscles can lead to both urinary and fecal incontinence. In other disorders of the bowel and bladder, however, the pelvic floor muscles retain an excessive amount of muscular tension, both at rest and at times when they should be completely relaxed, as during defecation or urination. When there is a neurologic injury, there often occurs an associated spasticity of the pelvic floor muscles which disrupts the coordination of bowel and bladder functions and leads to an inability to evacuate or urinate. However, even where there is no neurologic disorder, people often exhibit excessive muscle tension in the pelvic floor and report various symptoms which are associated with this excessive muscle activity.

For any individual person, it may not be known how or why excessive pelvic floor muscle tension develops. It is possible that there is a natural disposition toward the development of this tension. The excessive tension may be a learned reaction to stress or pain or, it may occur with trauma to the pelvic structures which leads to subtle, unrecognized injury to the

nerves or muscles which contribute to the development of “spasm” like activity in the muscles. It is likely, however, that in many cases, excessive tension develops from a combination of several of the above factors. For example, an individual who has undergone pelvic surgery may experience pain associated with the trauma to the nerves, muscles and other tissue of the pelvic floor. In response to the pain, there often occurs a tendency to contract the pelvic floor muscles as a protective, or “bracing” reaction. If continued over time, this reaction may lead to chronic muscle tension.

Disorders that are associated with elevated levels of pelvic muscle activity have been given various names and include the following. Some of these conditions have considerable overlap in symptoms because they have the same underlying cause.

**Proctalgia Fugax.** People with this condition report severe and sudden attacks of sharp pain in the rectum and anal canal. Parts of the anal canal may be tender and people often describe their attacks in terms of a stabbing, burning, or grinding pain localized in the anal canal or rectum. Attacks often follow defecation, sexual activity, or stress, but may occur spontaneously as well.

**Levator Ani Syndrome.** The levator ani muscle forms a major portion of the pelvic floor muscle group. This condition is marked by continual discomfort in portions of the anal canal and can extend throughout the pelvic region and into the vagina. Some patients have described the feeling associated with levator ani syndrome as having the anal canal pulled in knots, or feeling there is a hard object, like a golf ball, in the anal canal. Women with levator ani syndrome often complain of pain or discomfort with intercourse. Some people with this condition also report pain or muscle spasm that extends across the buttocks, down the legs and up into the lower back.

**Coccydynia.** This condition is marked by pain around the coccyx or tailbone. People sometimes refer to the sensations associated with this disorder as a feeling that the tailbone is “on fire.”

**Pelvic Floor Tension Myalgia.** This is another term referring to pain and discomfort associated with the three syndromes described above.

**Anismus.** This condition is marked by the failure to relax or, a paradoxical contraction of the pelvic floor muscles with defecation. “Paradoxical contraction” refers to the abnormal increase of pelvic floor muscle activity with defecation rather than the normal decrease in muscle activity. This condition can contribute to some forms of constipation, complaints of incomplete evacuation and straining with stool.

**Voiding Dysfunction.** Excessive pelvic floor activity is also associated with bladder disorders which include symptoms of voiding hesitancy, interrupted stream, urinary urge, and painful urination.

In addition to the above disorders, excessive pelvic floor muscle tension can contribute to the development of various other conditions. When one defecates and strains against an unrelaxed and closed anal canal, a considerable mechanical stress is placed upon the structures of the pelvic floor. Over time, the stress associated with chronic straining can advance the development of anal fissures, hemorrhoids, rectocele, solitary rectal ulcer, and a condition called perineal descent. It is very important, therefore, to seek a medical assessment to determine the reason for excessive straining or the presence of any of the conditions listed above, so that appropriate treatment can be undertaken.

## Treatment

In the above information, the pelvic floor muscles were described. An important distinction was made between the voluntary control characteristic of pelvic floor muscle, in contrast to the involuntary nature of the muscle of the rectum, colon, and bladder. Thus, we normally have direct control over pelvic floor muscles, e.g., when we contract them to prevent the loss of stool and urine or when we relax them to begin the evacuation or urination process. The pelvic floor muscles also function to support the organs of our lower abdomen and, as such, are always partially active, except during defecation or urination. When we evacuate, we relax these muscles quickly and completely which cues the smooth muscle of the colon, rectum, and bladder to propel feces or urine through the anal or urethral sphincters (the voluntary muscle which surrounds the urethra or anal canal). In fact, if you could watch the pelvic floor during urination or defecation you would observe that as this muscle group relaxes, the pelvic floor drops downward. This controlled downward descent allows for evacuation or urination without straining. Pelvic floor muscle contraction and relaxation are learned coordinated responses that, like other well-learned actions, become automatic. However, our control over these muscles can be disrupted through trauma, disease, or faulty learning.

When the pelvic floor muscles become overactive, their normal contract-relax coordination is disturbed, leading to bowel and bladder disorders. Furthermore, if excessive activity continues over time, the muscles become taut, shorten and spasm. The term spasm refers a constant state of excessive muscle contraction which is often associated with pain or discomfort. Unfortunately, muscle overactivity can persist without the individual being aware of the actual spasm or incoordination, experiencing only the secondary symptoms associated with the various disorders previously discussed.

Because pelvic floor muscles are controlled voluntarily, their function can be improved through various learning procedures. Biofeedback is one learning procedure that uses sensitive electronic instruments to measure and then demonstrate bodily responses of which the individual is not

normally aware. The electrical representation of the responses is displayed on a computer screen in a way which helps the patient differentiate and practice those responses that are associated with better physiological function.

When muscles contract, they generate a minute electrical voltage which can be recorded by special sensors and sensitive instruments. Measurement of the electrical activity of muscles is called electromyography, abbreviated as EMG. In the biofeedback treatment for bowel or bladder dysfunction, a therapist places a small EMG sensor in the anal canal or vagina which measures and then displays the electrical activity of the muscles being recorded. Other types of sensors are sometimes used for biofeedback but EMG seems to be the most frequently used. With the help of the “feedback” provided by the instrument, the therapist provides special instruction to guide the patient in changing abnormal muscle activity toward that which is associated with normal bowel and bladder control, or the reduction of painful spasm. Patients are usually seen for several sessions over the course of 2-3 months and are given home exercises and strategies so that improvements made within each treatment session are maintained at home.

Biofeedback is a promising treatment for disorders related to excessive pelvic floor tension because it has the potential to change the disordered muscle activity, changing life-long muscle patterns toward those associated with healthy bowel and bladder habits. Furthermore, biofeedback has the advantage of being risk-free. Recently, a number of research articles have shown that biofeedback effectively reduces chronic constipation associated with outlet obstruction due to non-relaxing pelvic floor muscles, supporting the effectiveness of this technique in reducing excessive and uncoordinated pelvic floor muscle activity. The major shortcoming at present is that biofeedback is not readily available to many people because it requires special equipment and a well-trained therapist. Generally, functional improvement is the result of a systematic application of the biofeedback procedure by a knowledgeable therapist as well as considerable practice at home by a motivated patient. Appropriate changes in diet may also be called for. It is hoped that as bowel and bladder disorders are better diagnosed, more centers will develop quality biofeedback programs.

Other, conservative treatments for disorders related to excessive pelvic floor muscle activity include various physiotherapy modalities which may incorporate rectal diathermy, hydrotherapy, massage, and postural adjustments. Electrical stimulation to the pelvic floor muscles is sometimes used to fatigue or normalize muscle activity to augment their relaxation. All these techniques can be used independently or in conjunction with biofeedback.

Medication may be prescribed to relax muscle spasm or to address other symptoms related to the pelvic floor disorders

such as irritable bowel symptoms. Also, injections directly into the muscle are sometimes administered for the purpose of relaxing the spasm and thereby decreasing pain. There are surgical procedures which partition the tight muscle or dilate the anal canal to stretch the muscles. Obviously, the more conservative, risk-free procedures such as biofeedback should be tried before more invasive procedures.

Before any treatment is undertaken, however, it is essential to have a thorough medical evaluation to determine the underlying cause of the symptoms and to learn of the various treatment options. It is also important to identify dietary and life-style factors which affect bowel and bladder function. In many cases, some symptoms can be reduced with modifications in diet or bowel habits. To be effective, therefore, the evaluation and treatment should address all factors which may interact with the pelvic floor muscle disorder.

### **Suggested Reading**

Plummer MK, Tries J. *Biofeedback & bowel disorders: teaching yourself to live without the problem*. IFFGD Fact Sheet No. 112, 2012.

Thompson WG. *Proctalgia fugax - and other pains*. IFFGD Fact Sheet No. 160, 2012.

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537 Long Point Road, Suite 101  
Mt Pleasant, SC 29464

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